DEVELOPMENT AND ONSITE APPLICATION OF A SPECTOPHOTOMETRIC METHOD FOR THE DETECTION & MEASUREMENT OF AZIDES AT LOAD LINES 9 & 11, RAVENNA ARMY AMMUNITION PLANT, RAVENNA, OHIO

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WORKSHOP ABSTRACT

The Ravenna Army Ammunition Plant (RVAAP), a former Government Owned/ Contractor Operated (GOCO) facility was built in the early 1940s in support of the war effort. Much of the facility was closed in the early 1970s. RVAAP was a loading, assembly and packing operation that produced a variety of munitions and munitions components such as fuzes, detonators, lead cups and boosters. Primary explosives utilized in the manufacture of the various products at RVAAP included Lead Azide, and Mercury Fulminate. The plant has one detonator, one artillery primer, two booster and two fuze lines. Many of the aforementioned lines have been inactive since the 1950s. Equipment and building decontamination utilizing primary explosive deactivation procedures for the most part was lacking, or non-existent during the war years, and normal wash down procedures quite often lead to sump overflow and soil contamination.

During any intrusive investigation or removal of these compounds, safety hazards have required handling primary explosives with extreme care. **NO FIELD ANALYTICAL METHODS FOR LEAD AZIDE WERE READILY AVAILABLE**. To ensure an explosive hazard did not exist during the investigation or removals conducted at Load Line 11 (Artillery Primer Line) at Ravenna, it was deemed necessary to develop an analytical field method for the determination of azides. Sumps at Load Line 9, a detonator manufacturing line, specifically those outside the Lead Azide bulk handling buildings investigated also required a field method.

Presentation will include safety, sampling, sample preparation and measurement techniques used for the investigation. Calibration curves for the azide ion from two different events, continuing calibration, matrix spike and data results for water, soil, plasters, paint fragments and sediments analysis will be presented. Potential and existing interference are also discussed.

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BIOGRAPHY OF FRANCIS ZIGMUND

Mr. Zigmund served 7 years as Chief Chemist of the Lake City Army Ammunition Plant. In his capacity as Chief Chemist, he was involved not only in the day to day production operations, but was integrally involved in the environmental problems associated with the facility. At the Corps of Engineers over the last 7 years, he was directly involved with the planning and removal of sumps and the excavation of soils contaminated with primary explosives. A prime example is the removal effected around Bldg 705, the bulk Lead Azide handling building at the Kansas Army Ammunition Plant in 1997. In 1998, Mr. Zigmund was a USACE team member integrally involved in the planning and execution of the sumps characterization program at the Lake City Army Ammunition Plant. The investigation included sumps in the detonator and primer blending and manufacturing areas utilizing the primary explosives, Lead Azide and Lead Styphnate. His most recent involvement with investigations and interim removals was at the Ravenna plant. His experience in the field of analytical chemistry spans thirty-six years, and consists of both laboratory and field development and applications.